1.7 Applications of Linear Systems: Percent/Mixture Problems

1. Percentages can be expressed as a fraction or a decimal.

$$25\% = \frac{25}{100} = 0.25$$

2. Use the wording of the question to help you choose your unknowns (variables).

3. Make sure your units are consistent.

Assigned Work: p. 27 # 7 p. 39 # 11 p. 55 # 10, 12

Ex. 1) One type of granola is 30% fruit, and another type is 15% fruit. What mass of each type of granola should be mixed to make 600 g of granola that is 21% fruit?

① $x + y = 600$

② $0.30x + 0.15y = 0.21(600)$

let x represent grams of 30% fruit

let y represent grams of 15% fruit

ANS

$y = 360$

$x = 240$

Copy and try this!

Ex. 2) A chemistry teacher needs to make 10 L of 42% sulphuric acid solution. The acid solutions available are 30% sulphuric acid and 50% sulphuric acid, by volume. How many litres of each solution must be mixed to make the 42% solution?

① $x + y = 10$

② $0.30x + 0.5y = 0.42(10)$

let x represent litres of 30% acid

let y represent litres of 50% acid

ANS

$x = 4$

$y = 6$

Try this!

Ex. 3) A candy store is preparing a mixture of chocolate raisins and chocolate peanuts. The raisins sell for $2.22/kg and the peanuts for $1.75/kg. How much of each type must be mixed to make 20 kg of a mixture that will sell for $41?

① $x + y = 20$

② $2.22x + 1.75y = 41$

$\frac{41}{20} = 2.05/kg$

$2.05(20)$

let x represent kg of raisins

let y represent kg of peanuts

ANS

$x = 12.77$

$y = 7.23$